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Facts and Folk=Lore in Meteorology

When the pioneer prospector discovers, or thinks that he has discovered, gold, others, hearing of it, gather about the place like bees around a quantity of exposed sweets. Along the lines of science and invention we often see the same spirit. One man makes an invention; this soon excites others to compete with or excel him; but in the department of meteorology there is undoubtedly an exception.

The weather map in the United States was first published in 1870. One would have thought that the men of science and influence would at once have been interested in it, and become familiar with its revelations. But such is not the fact; at least, if we may judge by what, on this subject, so readily gets into print. The old folk lore still holds its influence, and wise men still talk about sun spots, moon, and planet influences. These intelligent persons tell us that science cannot explain the "Texas norther." A prominent writer, referring to the cold weather that a few years ago destroyed the Florida orange crop, says: "Some unexplained stroke of Providence, by which the orange groves of Florida were laid low by the withering touch of the hand of dread winter." Another prominent writer in one of the daily papers of the country tells us that "meteorologists are beginning to take more stock in the old proverbial sayings." These same parties are still trying to connect the weather with the moon, or the "groundhog."

A recent report from the Madrid University, covering a period of twenty years, from 1882–1901 (note the recent date), shows that the maximum number of thunder storms is during the first quarter of the moon. Commenting along this line, a New Orleans paper refers to a rain in June, 1902, in the full of the moon, as

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though the full of the moon, or any condition of the moon, had anything to do with it. June 27, 1902, we have a morning report from Dallas, Texas, which says: "A drought of six weeks was broken here to-day by a slow but steady drizzle." This was about a week or two after the great rain at New Orleans, that was supposed, in some mysterious manner, to have been produced by the "full of the moon" shining over the territory of New Orleans. Why did not this full moon at the time extend its influence to the suffering locality of Dallas?—the same moon that shone over New Orleans on the same night, and only about an hour later shone over Dallas.

A prominent English scientist is still working upon the problem of some period in the duplication of the weather. He thinks thirty-five years about the correct period. Vennor exhausted all the periods of cycles of intervals. He tried all the variations that he could think of; all failures, as they necessarily would be. But in one of his last almanacs he admits failure along this line. Yet twenty years later, with all the accumulative evidence of the weather map, accessible to him, this other man is still hunting for a period, of repetition; to discover some cycle in which the weather shall repeat itself. Another eminent scientist fears the exhaustion of the atmosphere. If he would but consult the weather map he would readily see that the world can have no well-founded fears from this source. Then in the economy of nature the elements are not destroyed; minor parts change from or enter into strange temporary combinations; but the elements that have created these forms or combinations are not destroyed. It would be more reasonable to hold that the waters of the earth would become so polluted that life would be destroyed through that source. But we see that the natural forces are not destructive or repulsive; it is only when unnatural combinations are made that the product becomes repulsive and even destructive. Nature has a way of separating the repulsive and destructive combinations and restoring the original parts. In confined localities, where nature cannot operate to advantage, these combinations may exist for a while; but in the broad fields of open nature, where she is untrammelled by local surroundings, the balance of parts is soon restored. There is more instruction in the weather map than at first appears to the mere casual observer.

Meteorology cannot be studied in a contracted locality. We cannot study the tidal system in a mill pond. We must necessarily have an extensive territory. The areas of HIGH and LOW barometer cover wide fields; and the territory must be extensive enough to take in the whole area of at least one set; and the more extensive the area the better the results. In the United States we have an approximate oblong square of 1,500 by 3,000 miles. This is most advantageous. Could we have stations through Mexico it would add much to our system; and could stations be established on the Pacific Ocean, say 300 to 500 miles apart, from whence we could receive reports, it would be of great advanage to us, especially to the Pacific coast States.

The movement of the atmosphere is from the west towards the east, or towards the rising sun; hence the reason of the desirability of ocean stations to the west. Such stations to the eastward would be of no advantage to the United States, but would be of advantage to Europe. Because we say that the movement of the atmosphere is from the west towards the east, let not the reader think that by this we mean that the atmosphere moves as a mass, or that it, in any way, resembles a great wave passing over the surface of the earth; while it moves it does not do so in such a manner; its methods are peculiar, and will be explained under the movement of the two grand divisions of the atmosphere, known as high and low barometer.

The weather system, in its conditions, is not regular, but irregular, and not amenable to mathematics. Trees, for example, belong to different classes, as oaks, elms, apple trees, etc., but who ever saw two trees, of even a class, alike, or even two leaves?

Now suppose we ignore, or lightly regard the vegetable kingdom because we cannot apply mathematics to their morphology. It would be simply absurd, but not more so than the neglect and indifference of the grand factors revealed to us by the weather map, because the laws that govern our atmosphere are not amenable to mathematics.

The equator being the warmest section of the earth, and the polar sections the coldest, it would seem that there should be a continuous flow or movement of the cold polar airs towards the equator; but such is not the fact. On the same principle it would seem that the rivers of the earth should flow from the

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equator towards the poles, yet they do not—indeed, more rivers flow towards the equator than from it. There seems to be no controversy, or want of understanding, as to the rivers, but when it comes to the atmosphere, that is not generally understood. The old physical geographies taught some erroneous things about our atmosphere; and the trouble is that the world retains these assertions, rather than heed the facts that have come to us through the source of the weather map. A sort of hybrid combination has been developed by men who see some advantage in the weather map, yet they still want to retain all they can of the old system as taught in the physical geographies, before the map of the atmosphere was known. They even try to retain much of the old folk lore; and try to combine this with the facts and wisdom of the map, rather than to pay their attention to something tangible and valuable.

One writer informs the world that we, of the western hemisphere, " make the weather for the whole world ;" when the whole world makes its own weather. It is being made or developed at all places and at all times. The idea that it is made, as some manufactured article might be at some one point, and sent out to the world, is nonsense. Then these writers like to introduce mysterious terms. An article on " Cause of a Cold Summer " refers to "sun spots, * * * its electro-magnetic influence is hardly yet understood at all, and therein may lie the explanation of cold, gloomy summers, and other freaks of weather and climate, which confound the calculations of man ;" and some persons seem to think such a statement an indication of profound wisdom. Then there is the term " cyclone," which was invented before we had any valuable information, such as comes through the facts daily impressed upon the weather map. The term is a misnomer, and there is no authority for it. It was invented because it was thought that storms travelled in epicycles; and from this the center of low barometer came to be regarded as " cyclomatic ;" and as the area of high barometer is the opposite of low barometer, that must necessarily be " anti-cyclomatic ;" so these two absurd terms are in constant use. Later on I shall refer to this in its proper place.

In 1831, John Adie, writing on meteorology, said: " The winds cause the barometer to rise." While this is absurd, we have no severe comment to make on Mr. Adie's statement, because he was necessarily in the dark as to facts. This was forty years before the great atmospheric illuminator, the weather map, had made its appearance. But, when more than thirty years have passed since having this wonderful record, the map, before us, and men still hold to obsolete ideas, and endeavor to teach that which the evidence will not warrant, and persist in ignoring the evidence, for this age of the world, it seems strange indeed. A short time since I wrote an article on the absurdity of the old folk lore, "Too Cold to Snow." A person under a pseudonym replied to me, and made the statement that the "areas of high and low barometer do not control the weather" (!) ; and, notwithstanding the evidence of the map, attempted to prove that the old folk lore saying was correct— and he got a hearing !

There is the man whose inventive genius prompts him to invent some delicate mechanism whereby he thinks that, from some local point, he can obtain advanced indications of a coming storm. He does not seem to understand how the storm centers are the while passing over the country, and that an observation, however superior, from some mere local point is of no superior value ; that the superiority of our observations depends wholly upon the observations at many points scattered over the whole country, and that the greater the extent of country covered, the more valuable are the results. No matter how delicate an instrument, it cannot possbly indicate the conditions of the HIGHS and LOWS that are from 500 to 2,000 miles away. Then, as a companion to this man, is the man who thinks that there is an advantage in being on some high plateau or mountain top. Yet this man deceives many, and the public seem to believe in his ignorant and conceited views. There is no advantage, for this purpose, in the high altitude.

The storms of the colder and warmer months are not wholly alike. In the colder months, and to some extent in the warmer months, the storm is more concentrated as to locality ; and in and about the main center of LOW, the storm will prevail. But in the summer months there is a peculiar and additional condition, recognized under the head of "locals." The "locals" are the result of an effort on the part of nature to establish a multiplicity of sub LOW centers, apart from the grand center that may be five hundred, or even a thousand miles away. The summer "local" takes place to the south of the main center. During the warmer months when the "locals" prevail we cannot definitely locate them ; all that we can say is that a "local," or a number of "locals," will take place at certain points to the south of the main center. The main center may be passing out the St. Lawrence Valley ; the "local" may take place at points anywhere 500 to 1,000 miles to the south of it. The "local" is a short, fierce storm, the better and best name for which is the "tornado." The term "cyclone" originated before we had definite information as to the cause and action of the storm. The wind is always from the HIGH towards the LOW, not on a direct line, but more or less curving towards the right as we stand with our back to the HIGH. As the winds, from all points of the compass, are rushing in towards the center LOW, from all points of the compass, as they approach the center, they react upon each other, and the nearer we approach the LOW center the more they curve in towards it and neutralize the force of each other, so at the very center of LOW there is often a dead calm. Before we had the evidence from the map it was thought that the winds must travel in curves and epicycles. They curve towards the right, but not after the manner of the epicycle. Then LOW itself practically travels on straight lines, much like a railroad ; it curves here and there and changes direction, but it does not travel in such curves as are indicated on old maps of storms. The "local," or "tornado, is the result of intense concentration of heat. It is nature's attempt to produce a vacuum ; and the old vulgar phrase, "just before she does she doesn't," well illustrates the condition. The territory where there is an attempt to establish a LOW, becoming intensely and rapidly heated, produces a center towards which the winds, from some point to the south thereof—along a narrow passage rush with terrible violence. Winds rushing with the speed of fifty to one hundred miles an hour do not stop to make epicycles. Rushing with such speed they become, as it were, a thing of life—concentrated into one huge bolt, which, in its lightning speed, obeys the law of any concentrated body thus moving ; it bounds and rebounds, upward and downward. After the storm has passed and the ground studied, and certain evidences found of grazing one obstruction—demolishing another—because of this the hasty conclusion was that these bolt-like forms of concentrated airs must travel in curves and epicycles; hence the name "cyclomatic." But bodies moving at such terrible speed do not stop to make fancy circular paths or evolutions. They often knock things askew, and even bound over an obstacle—some object in their path acting as a deflective agent. "Tornado" is a good word—let it stand to represent the fierce summer "local." Let the term "hurricane" stand to represent the fierce general storm; but let the term "cyclone" be eliminated—at least in this connection, for in nature there are no such conditions as this word would imply.

The situation of the sun in the ecliptic, and the high table lands and low valleys, have somewhat to do with our weather, but not as much as one unfamiliar with the facts would think. Even the warmth of the tropics or the cold of the polar regions have little to do with our weather system; only indirectly supplying warm and cold air, but not the cause of movement or direction on which so much depends. The polar regions are cold and the equitorial regions are hot; but by the agent we term LOW the airs of both regions are transported back and forth; wherever LOW is, the wind is towards that point, be it at the north or in the south. So this agent LOW may well be termed the readjuster of temperatures.

The line of argument indulged in by those who ignore the evidence of the map is peculiar. "We have," they say, "accomplished many wonderful things—things that were once thought to be impossible, why cannot we control the weather?" We have accomplished many wonderful things, but all that we have accomplished has been along the line of natural laws. As we have discovered natural laws we have applied them. We have, however, never created anything nor diverted nature's laws. All that we have accomplished is along the line of nature, imitating her, and the nearer we can do that, the more wonderful our inventions, and the greater our progress. But when a man, on this line of argument, thinks that we should be able to control our atmosphere, it is quite evident that he does not know what would be necessary in order to accomplish it. Can any human power ever cause the earth to turn upon its axis in the reverse direction of the present? At present it turns towards the east. The movement of the factors HIGH and LOW, through which all the changes of our weather come, move in a direction against the sun, or from the west towards the east. The next step along this line would be to control the movement, speed, intensity, lines and direction of these factors, or wipe them out altogether. I think that man will never reach this point; and when those who govern the press of the world fully understand this, and the grand revelations of the weather map, no such communications will be honored, even under a pseudonym, and enlightenment along this line ignored.

In the United States we have a grand field for observing the phenomena of the atmosphere. Approximately we have an oblong square, 1,500 by 3,000 miles, and all this territory under one government, Stations of observations are scattered all over this vast territory. Reports are now made twice in the twenty-four hours, at 8 A. M. and 8 P. M., Washington mean time. The barometer pressure is reduced to the sea level, so the altitude of a locality plays no part in the mathematics of the case. These reports are immediately sent in to headquarters at Washington, there tabulated, and the map of the atmosphere, as it exists at the hours of 8 A. M. and 8 P. M., is therefrom printed and daily sent out to the world. From this map we see that there are two factors, HIGH and LOW barometer, technically known as HIGH and LOW, the movements, location and changes of which produce all the changes of the weather. There are four general points at which the areas of LOW enter the territory of the United States. One in the northwest, in the vicinity of Puget Sound; one in the southwest, in the vicinity of the head of the Gulf of California. The entrance of these two are well defined; the third, for want of stations in Mexico, is not so well defined; its first appearance, in or near our territory is along the shores of the Gulf of Mexico, and from there it travels in a northeastly direction across the Gulf, generally entering our territory at the mouth of the Mississippi. These may be identical with what we now term the fourth set—that come up from the West Indies, and become first known to us by their contact with the coast of lower Florida. Whether the sets three and four are one and the same, as distinct sets, we are at present unable to determine. Only the proper stations through Mexico, West Indies, and along the Spanish Main will make this clear.

The HIGHS follow the LOWS, or the reverse, as we may be pleased to say; it matters not which we refer to as following or leading. These factors move in sets, *i. e.*, at one latitude there will be one set, at another latitude another set; hence the assertion that they move in belts; that they are ever on the move from the west towards the east, and that they encircle the earth. New HIGHS and LOWS are ever entering our western or southern territory. They move over the country, and all pass off the Atlantic coast in the northeast—the greater portion of them near Newfoundland. By the observations taken aboard the ocean steamers we trace them across the Atlantic. In Europe they are traced, still moving towards the east, and one at least is said to have been traced around the world, this being done by laborious collections of data. When the whole world has a good weather system we can obtain better information along this line. From what we already know we have no hesitation in asserting that the HIGHS and LOWS ever travel around the world from the west towards the east, and this readily disproves the assertions, so frequently made, that certain localities are the birthplaces of the storm centers. Occasionally a new one is apparently formed, as shown on the map. But it is more like a moderate stream, that at certain places almost comes to nothing, so delicate is the stream; then further on it widens out and becomes quite a river. But this only proves that the heat power of the sun is ever the while struggling to establish a LOW, and these new beginnings only take place when the surroundings are of a favorable character. The well-defined LOWS keep right along on their courses. The LOWS that enter at the northwest gate may move directly east; they may move towards the southeast, and go as far south as the mouth of the Mississippi, then turn towards the northeast and pass off the coast near Newfoundland, or they may take courses that are combinations of these. The one that enters the southwest gate may for a short distance move nearly east, then turn abruptly towards the north, and seek the line of the north set of LOWS. Sometimes these LOWS go as far east as the mouth of the Mississippi, then take quite a straight line towards the north, to the upper Lake region, and from there east out the St. Lawrence Valley; while at other times, from Texas, it will move northeast, towards the Gulf of St. Lawrence. The LOWS that we think come up from the territory of Mexico, from the Gulf, often travel on similar lines, moving towards the northeast—more or less on lines near to and quite parallel with the Atlantic coast. The fourth set, that seem to come from the West Indies, striking the lower coast of Florida, are more frequent during the late summer or fall months; and from them we often get terrible storms along the coast—storms that we designate as "hurricanes." Many of these storms that come up from the West Indies and the Gulf pass near the vicinity of Hatteras; hence the stormy conditions that are so often present there. These LOWS also travel on general lines towards the east, yet there are apparent exceptions. Occasionally one of these LOWS that come up from the West Indies, instead of moving along the Atlantic coast line, move inward towards the center of the country, for a day or two even travel towards the northwest, but this erratic course is short; by the time they reach Ohio they turn to the east, and renew the old track. The LOW that produced the severe storm at Galveston a few years ago was one of these from the West Indies. It moved north as far as the south end of Florida; from here it abruptly turned towards the west, and all day travelled in a westerly direction. It being of a very low-pressure character, its action was intense. The lower the pressure of the barometer the more intense the storm. From Galveston this LOW turned towards the north, then more and more towards the northeast, and quietly passed off the Atlantic coast with a normal pressure. From the time it reached the Florida coast why did it for a whole day or more travel due west? If we will consult the map for that day we will see that an extensive HIGH lay along the Atlantic seaboard, like a great mountain diverting the course of a stream. This HIGH diverted the course of the LOW. Where there is a hill there cannot be a valley, and where there is a valley there cannot be a hill; where there is a HIGH there cannot be a LOW, and where there is a LOW there cannot be a HIGH. This HIGH so occupied the ground that the LOW was forced out of what otherwise would have been its natural course. If one wishes to follow up the courses and conditions of these LOWS, they are all delineated upon the weather map and form an interesting study. The most prominent HIGHS enter the Pacific coast, the greater portion of the year centering on Cape Mendocino, though during the cooler months they move up as far north as Puget Sound. We cannot mathematically state their position from time to time, for the variations are so peculiar that mathematics can play no part in the program. Mathematics is a goodly science, along some lines, indeed indispensable; but in the department of meteorology it is of little or no account. It cannot demonstrate to us where the HIGHS and LOWS will enter our territory. It cannot locate them as it can locate an eclipse or a transit, or even the times of the ebb and flow of tides. It cannot inform us in advance the directions that these factors shall take. It cannot inform us as to the speed that they shall have. It can, of course, easily tell us of the speed of the past, but not of the future. Nor can mathematics play any part as to the outlines these factors take, much less the changes from hour to hour; and this is perhaps the principal reason why so few scholars have taken interest in the map. There is no field here for the application of mathematics. We might as well attempt to apply mathematics to the cloud formations. A HIGH entering the Pacific coast, as it does, with a LOW to the north and a LOW to the south of it, accounts for the peculiar climate of California. All attempts to write upon the climatology of any locality, ignoring the weather map, is simply mental energy thrown away. In the winter there is a greater contrast between the HIGHS and LOWS than during the summer months. During the winter the contrast is at times as much as three inches—31 and 28; while during the summer months the prevailing difference will not be more than as many tenths—30.2 and 29.9. Occasionally there will be a LOW with a center as low as 29.4, or even less, but this is not the prevailing condition. In the winter the HIGHS are very high and the LOWS very low in pressure, while in the summer the HIGHS become depressed and the LOWS relatively raised, making the atmosphere in summer quite near a level line. Until we had the map, we could not understand why, at times, it should be as warm in New England as in the Gulf States, or as cold in the south as in the north. But now it is as plain to us as that the steam drives the engine, or that oxygen will corrode iron. The winds are always from the HIGH towards the LOW; not on a direct line from the center of one to the center of the other, but towards it. The mission of LOW is to attempt to create a vacuum. This, of course, cannot be done. But at this point the heat is centered, and this produces the winds. If a LOW is in the northeast, another in the northwest, with a HIGH in the south, as HIGH is a cool and dry factor, and such in proportion to its intensity, the isothermal line will run from the two northern points to the point in the south.

Science cannot explain the "Texas norther," or the cold withering blast that destroyed the oranges in Florida. The "Texas norther" and the destructive force in Florida are and were one and the same thing. The "Texas norther" is the result of a HIGH moving southeast from California towards the Gulf; with it goes a cold air, that to the people of the south is very penetrating; sometimes often reaching the point of the mouth of the Mississippi, it moves towards the Atlantic coast, with its longer axis along the coast. At other times it will move on a line farther south and east and take in Florida, and when it does, woe to the orange crops, and even the trees may be destroyed. Yet intelligent men put themselves on record in prominent works that science cannot explain this phenomenon. Take the cold south wind, the "too cold to snow" idea, or the sunshine and cold at HIGH, and the heat, yet want of sunshine at LOW—cannot be explained (!) The weather map explains them readily, while the effort to do so by those who ignore its revelations is most exceedingly labored, bewildering and unsatisfactory. The winds from the south are at times quite cold, feeling as though they came off an iceberg. It does not seem natural to have such winds come from the tropics, yet they often do come from that direction, and the weather map readily and satisfactorily explains the phenomenon, and the explanation is along the same line as the explanation of the "Texas norther," and from the same cause. The HIGH that has moved down into Texas moves on towards and centers in the Gulf, whereby all the winds from farther south are cut off. HIGH being, as it were, a great mountain, we at the north get the cold winds from the northern slope of the cold, dry factor. To the south, from the southern slope, the winds will be from the north, and remarkably cold for winds so near the tropics.

During the late fall and winter months we frequently hear the expression "too cold to snow." Along the same line we might say that it is too dry to be wet, when the simple solution of it being dry would be because we were on high land with sufficient slope of ground to carry off all the water that might, under different conditions, accumulate. LOW is the wet factor; when it is upon us we have more or less precipitation, in kind, according to time of year, snow or rain. When it is approaching we have the advanced lines that forewarn us of a storm that must be near. But the storm does not always touch our locality. Like the water cart on the street, it may pass our door too far away for us to derive any benefit from it; yet it passes our locality nevertheless. So LOW may often pass us with very little or any sign beyond a mere sprinkle, or a few flakes of snow. To the west of the LOW there is an approaching HIGH, which chills the air. The air is not yet cleared of the little moisture resulting from the passing LOW. It *feels like snow*, but does not snow, for the reason that the center that would supply the material has passed beyond our limit. Before the weather map came and explained it, because of the low temperature of the atmosphere, resulting from the approaching HIGH, it was thought that the cold had something to do with it. There is no material in the HIGH to produce the snow. "Aquarius" has gone by.

As to the clear sky and low temperature, and the clouded sky and high temperature, that "cannot be explained." When HIGH is upon us the sky is clear, and even though there is nothing to interrupt the sun's rays, it is cold, simply because of the nature of HIGH, as herein referred to. When LOW is far to the north, south winds are thereby engendered. We may be in the outer lines of this LOW; it will therefore in our locality be cloudy, the sun's rays thereby being shut off. Under this condition it will be relatively warm for the season. The sun is not visible to us, but it is doing its work—producing a LOW to the north, whereby the hot winds from the south are brought to us. There is another phenomenon that they say "science cannot explain;" yet if we will but investigate along the proper channel the explanation is so plain that it would seem that it should not be challenged. The weather map is not only valuable for what it reveals along the surface of the earth, but if we will follow it up we shall find it to be a veritable "Jacob's ladder," whereby we may climb above the earth and see the movement of the atmosphere about us. At times the air on top of Mount Washington is warmer than it is in the valley. Why? If on these occasions we consult the map we shall readily see and understand, even though it be one of those phenomena that "cannot be explained." Along the surface of the earth the areas of HIGH and LOW move in close contact with the lands—from the west towards the east. Above the earth this movement is reversed, or, perhaps better, quite different in its action. At the center of LOW, by the process of "convection," the air ascends and follows or imitates the lines of the boiling water in the pot. It ascends and flows outward from the center, and by this process the HIGHS are built up; the atmosphere purified, and, as it were, renewed. The airs from the ascending LOW are necessarily heated beyond that of the surrounding air; as this heated air ascends it comes in contact with the cold surrounding the atmosphere of the higher regions. As it is beyond the influence of the pressure of heat, by its weight it soon falls towards the earth, whereby the areas of HIGH are built up, the upper strata of which is thereby, for a short time, made up of warm airs—airs that later on, by contact with the cold surroundings, become chilled, and much reduced in temperature. By this process, when the HIGH, the LOW, and the mountain tops are in proper relation with each other, the air on the mountain top may be warmer than the air of the valley. This warm air has sometimes been referred to as the "Chinook," but the name has been confounded with the warm surface airs from the south towards a north LOW, so the term is confusing, until we explain how we use it. During the cooler months of the year there is often a peculiar condition of HIGH in the northwest. We have said that HIGH moves from the west towards the east. There are times when for two weeks this HIGH will not appear to move, yet if we will notice it carefully we shall see that its action is indeed peculiar. When it enters the Pacific coast its intensity will be great, say 30.7, or even more. From day to day the outlines of the gradients will change, but the real center remains, and even sometimes pushes further west. But if we observe closer we will see that the pressure is gradually being reduced. Day by day the gradiants extend, and indicate less and less pressure. When the center has been reduced to about 30.3, a sudden and rapid movement takes place—towards the east. HIGH is the great magazine of the atmosphere—the Boreas or wind-bag of the old Greeks. They realized that the air came from somewhere, and they supposed that it was a new supply ever being made by the gods at the north. They did not know that a greater spirit has formed His laws; that the same atmosphere is the while being renovated, and returning in a new and vigorous form—all the result of the wonderful action and reaction of the factors we term HIGH and LOW—factors for which the world, up to date, seem to have little regard—little regard for the medium that will, if they will but heed it, impart to them all the necessary information whereby they may understand the mysteries of this department of nature. We have not the time to go into all the details of the map. The map is surely worthy of our careful study. By it we can understand our weather system as never before.

The more the public interest along this line the greater the possibilities of the map. For the greater interest will advance and extend its scope, whereby the beauty of our meteorological system may be better studied and understood, and we reap greater practical benefits from the rich harvest that it shall bring to us.

ISAAC P. NOYES.

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